

The TENCompetence Personal Competence Manager

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Abstract. The European Network for Lifelong Competence Development is an Integrated Project funded by the EU. Its goal is to establish an innovative technical and organizational infrastructure using open-source, standards-based technology to support lifelong competence development. In this paper the TENCompetence approach to competence development in lifelong learning is described, and the challenges which this presents users are outlined. A solution is proposed through provision of a service oriented architecture that enables users to integrate and carry out their competence development activities. Users interact with the system using the Personal Competence Manager which supports users in managing their competence development described.

Keywords: TENCompetence, personal competence development, competence management tools.

1 Introduction

In acknowledging the necessity for Europe to secure a leading role in the global Knowledge Society, the EU has recognized the need to promote a workforce that is both flexible and knowledgeable [1]. To this end, it has given its backing to the TENCompetence project, an Integrated Project within the IST programme. The project's aim is to support individuals, groups and organizations in Life Long Competence development through the provision of a technical and organizational structure which employs open-source, standards based innovative technology.

This paper will describe the approach adopted by TENCompetence in developing and providing this infrastructure, and the functionality provided by a key component, the Personal Competence Manager.

2 What Constitutes Competence?

A definition of competence in the abstract is a matter which has been widely debated. The scope of this paper restricts itself to providing the definition used within the TENCompetence project. Building on the work of Cheetham and Chivers [2], a

competence is defined as the effective performance of an actor in a well defined domain. Griffiths and Koper [3] also note that within TENCompetence:

- A competence is a disposition of an individual
- A competence can be attributed to individuals, teams and organizations
- A competence is situational
- A competence is a latent attribute
- A competence is identified and defined in a community of practice

A great deal of information has to be generated and managed in the definition of such competences, and their relationship to job profiles, to competence development programmes, and to individual and organisational attainment. The task of TENCompetence is to provide support in this process and so to make Life Long Competence development more effective.

3 The Approach Taken By TENCompetence

Competence development currently requires the use of a variety of different systems which use different representations, interfaces and applications and which detract from the user's primary objectives. Furthermore, difficulties arise because formal competence acquisition is divorced from informal competence development and no unifying framework exists. TENCompetence is developing an overarching, coordinating framework within which daily competence development activities can be carried out. A key first step towards this goal in the first phase of the project has been the development of the TENCompetence Domain Model [4]. This model:

- articulates the scope of the project, and use cases
- defines the vocabulary used
- defines the relationship between the concepts used
- defines the overall conceptual architecture
- provides a technological theory for the project to be tested in the pilots
- provides a starting point for the design of other models, like the data model and services
- defines the minimal functional components that must be present in the TENCompetence infrastructure.

4 User Activities In Competence Development

Within this context the management and development of competences involves activities at a number of different levels. Each of these presents a variety of obstacles to different users, which the TENCompetence project seeks to address. Taking the

perspective of the individual we can distinguish the following activities which, while not exhaustive, provide a simple way of understanding the functionality provided by the system under development.

- **Defining a target competence profile.**

In order to take any practical steps towards achieving a development goal, the user needs to find or create an appropriate target competence profile which will provide the basis for defining a path for reaching it. This is not an easy matter, because:

- a) Competence definitions may be specific to a particular institutional or state context
- b) It may be difficult to compare competence definitions from different sources
- c) It is hard for individuals or groups to define their own competence definitions outside an institutional context, especially if they want these to be effective as the basis for competence development activities.

TENCompetence addresses these difficulties by facilitating the use of existing and formation of new social networks, and by providing tools through which individuals, groups and organisations can create manage and search for interoperable competence profiles across and beyond institutional boundaries.

- **Mapping to a competence development profile.**

Having determined the appropriate competence profile(s), the user maps their current competences onto the set of competences which they would like to obtain.. This involves assessment of current competences and a comparison of competences. TENCompetence addresses both these aspects. Firstly, an assessment model is being developed which will support users in representing those competences which they have already attained, perhaps in informal contexts. Secondly, comparison will be facilitated by expressing this model in formal terms and relating it to interoperable competence definitions.

- **Identification of competence development opportunities**

On identifying the gap between the current and target competence profiles, the user then needs to find appropriate development programmes (courses, documents, study resources etc) and choose between them. TENCompetence provides tools to support the user in creating or finding appropriate competence development resources and opportunities which are related to competence development profiles. These work in tandem with existing repositories in locating the appropriate learning resources. An environment is provided within which the competence development activities can be carried out.

- **Organizing a competence profile**

In order to organize and market a current profile, the user must collate and assemble diverse elements which comprise the complete competence profile. Information relating to their profile will be scattered across the separate institutions and

organizations in which the user has worked and studied creating a problem of retrieval and harmonization of information once obtained given the plethora of ways in which descriptions of competences are held. Firstly, TENCompetence provides support by enabling groups to define competence profiles. Secondly the service oriented architecture adopted by the project allows users to integrate information and documents from a wide range of institutional sources without insisting on the universal adoption of a single integrated solution (which would be both impracticable and restrictive) as described in Griffiths (2006) [3].

- **Building on experience**

Many users with competence development needs are often cut off from potentially useful shared experience. TENCompetence promotes the development of communities around particular competence development needs through integrated support for the Friend of a Friend community, shared competence development plans, and feedback via forums where requests for support can be posted by users. Work is also being carried out to enable agents to mine anonymous information generated by the patterns of competence development carried out with the system so as to be able to provide suggestions to users.

5 Personal Competence Manager

Many of the solutions to the management of competence development outlined in the last section come together in the development of a new type of application: the TENCompetence Personal Competence Manager (PCM), which parallels some of the work being done in the area of Personal Learning Environments [5].

The PCM is a rich client built in using the Eclipse framework. It enables users to access, manage and edit information provided by a TENCompetence server, or by other independent services. The first release of the system, known as Antelope, supports the processes described above. The PCM, uses a number of servers designed to store discrete elements of competence-related information which can be accessed and assembled by the use of an aggregator which clusters and delivers information to the user via a presentation interface which allows for manipulation of the information supplied.

In this context the term *personal* reflects the idea that the user rather than the organization holding information should have ownership of the system. The application of this principle means that all users and groups can create all categories of data within the system, and also edit all of these (unless restricted by the author).

Whilst other competence management systems exist they do not locate, aggregate and present competence information to the user, and tend to be oriented to the institution. In failing to allow users to drive their own competence development and in tending to work with a single provider of competence development programmes, institutions are limiting the flexibility and development of their workforces and with it their lifelong learning potential.

6 Research and Technological Design in Personal Competence Management Development.

The TENCompetence project involves fifteen partners drawn from a variety of complementary organizations from across nine European countries. A number of parallel lines of research and technological design will result in a number of models methods and tools which will be integrated into the overall infrastructure in future releases.

Knowledge resources and knowledge management for the creation, storage, use and exchange of knowledge resources related to lifelong competence development.

Learning activities and units of learning for the creation, storage, use and exchange of formal and informal learning activities and units of learning including tools for the assessment of the learning process and learning outcomes.

The creation, storage, use and exchange of formal and informal competence development programmes (including the assessment of previously required competence levels, navigation support and the sharing of successful formal and informal learning tracks.

Network and Communities for lifelong competence develop models, methods and technologies for the creation, storage, use and exchange of networks of competence development programmes from different sources around Europe to support lifelong competence development.

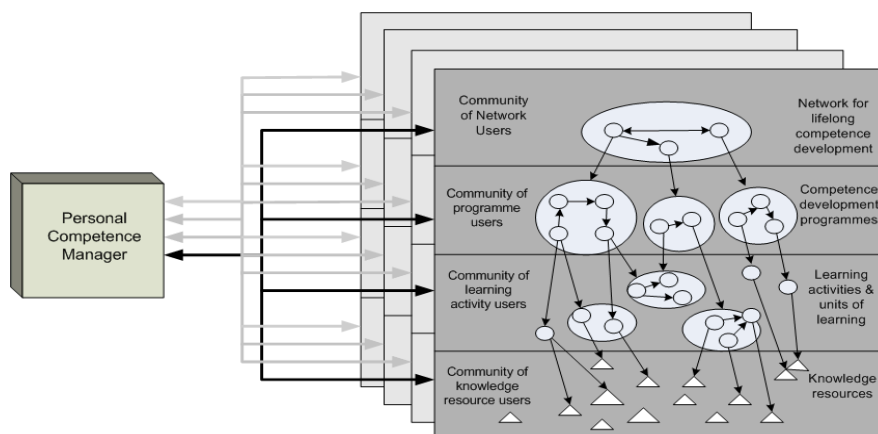


Fig. 1. Personal Competence Manager – Integration of networks, communities and R&TD

7 Pilots Using The Integrated System

Trials are planned to validate the system in real-life pilot implementations. The first two of these will be carried out in 2007 in the areas of digital cinema and of soft skills for computer professionals. These first pilots will provide proof of concept, to be followed by more numerous and extensive trials. A final round of pilots will take the form of business model demonstrators to help define the different ways in which the project's outcomes can be made sustainable. An Associate Partner Network has been established, and participation in demonstration and pilot activities is invited from all interested parties.

8 Conclusion

TENCompetence seeks to provide an Open Source, interoperable, service oriented solution for Life Long Competence development. The first results of this initiative, the Personal Competence Development manager have now been released under an Open Source license, and are available for download and use by any interested parties from Source Forge. This provides an infrastructure which will be extended as additional services from within and beyond TENCompetence are incorporated.

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